

LITERATURE REVIEW

Human-Centred AI Governance and Sustainability Capability Development in Higher Education: The AIMS AI-Human Framework

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ABSTRACT

PURPOSE: The study aims to examine how Artificial Intelligence (AI) mechanisms, governance responses, and human and institutional outcomes are represented within the higher education literature and to explore their implications for sustainability capability development.

DESIGN/METHODOLOGY/APPROACH: A Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)-guided systematic review examined 91 peer-reviewed articles published between 2020 and 2025.

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FINDINGS: The review identifies transparency, explainability, human oversight, accountability, proportionality, co-design, and appeal mechanisms as core governance principles. These are integrated into the AI Mechanisms, Institutional and Human Outcomes, Moderating Governance Responses, and Sustainability Capability Development (AIMS) AI-Human Framework.

ORIGINALITY/VALUE: The study connects AI governance, human judgement, institutional responsibility, and Sustainable Development Goals (SDGs)-aligned capability development in higher education.

KEYWORDS: *Artificial Intelligence; Higher Education; Governance; Human Judgement; Sustainability Capability Development; Systematic Review.*

INTRODUCTION

Artificial intelligence (AI) and smart technologies are becoming more influential in education, evaluation, administration, and decision-making within higher education institutions (Crompton and Burke, 2023). Even though AI is helpful in enhancing efficiency, scalability, personalisation, and decision-making, its success relies on appropriate governance to ensure transparency, equity, accountability, sustainability, trust, inclusiveness, and human intervention (Kioupi and Voulvoulis, 2019; Marengo *et al.*, 2024; Khan *et al.*, 2025). Given the lack of innovation and entrepreneurship in higher education institutions (HEIs), this research examines how AI integration influences governance and design issues related to fairness, roles, decision-making, and skills (Anthuvan and Maheshwari, 2025; Al Shukaili *et al.*, 2025).

Research on AI, sustainability, ethics, digital literacy, and higher education is highly fragmented. Literature tends to address ethical governance, sustainability literacy, digital transformation, and human-centred AI as separate topics within organisations (Strielkowski *et al.*, 2024). Consequently, AI's effects on people, institutions, and sustainability capability development are rarely examined through an integrated governance lens (Khan *et al.*, 2025). Although prior research discusses transparency, surveillance, autonomy allocation, algorithmic decision-making, performance evaluation, and digitalisation challenges, these concerns are seldom embedded in governance-oriented capability models (Trevisan *et al.*, 2024). Similarly, studies on data analytics and intelligent technologies often emphasise efficiency and usability, while other streams separately address ethics, digital skills, and sustainability (Cebrián *et al.*, 2020; Henriksen *et al.*, 2024).

In response, this study conducts a Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)-guided systematic review of 91 articles to examine how AI-related mechanisms, including opacity, surveillance, algorithmic governance, and data inequality, affect human and

institutional outcomes in higher education. It introduces the AI Mechanisms, Institutional and Human Outcomes, Moderating Governance Responses, and Sustainability Capability Development (AIMS) AI-Human Framework, a review-informed, human-centred governance model linking AI mechanisms, institutional and human outcomes, moderating governance responses, and sustainability capability development. The study examines four research questions (RQs):

- **RQ1:** What AI-related governance mechanisms are most frequently discussed in the higher education literature?
- **RQ2:** What outcomes are associated with AI adoption in higher education?
- **RQ3:** What governance approaches enable responsible and sustainability-aligned AI adoption?
- **RQ4:** How can AI, outcomes, and governance be integrated into a human-centred sustainability capability framework?

THEORETICAL FOUNDATION

The AIMS AI-Human Framework draws on human-centred AI, transformative learning, and systems thinking. Human-centred AI treats AI as support for, not a replacement for, human judgement, requiring governance that protects transparency, accountability, equity, autonomy, and human participation in learning, assessment, monitoring, and decision-making (Anthuvan and Maheshwari, 2025; Miao *et al.*, 2024; Jarrahi *et al.*, 2021; Williamson and Eynon, 2020). This is important as AI affects resource allocation, student support, performance tracking, and planning while creating risks of opacity, automation bias, surveillance, and information asymmetry (Jarrahi *et al.*, 2021; Kinowska and Sienkiewicz, 2023). Transformative learning explains how learners revise values, beliefs, and behaviours through critical reflection amid technological and social change (Mezirow, 1997), and in sustainability education it supports ethical reasoning, collaboration, systems thinking, and adaptive competence (Bernert *et al.*, 2025). Systems thinking perceives sustainability issues as institutional and socio-ecological issues that are defined by feedback, interdependence, and unforeseen outcomes (Kioupi and Voulvoulis, 2019; Sterling, 2021). Collectively, these theories place the systems thinking framework within the perspective of a unified model integrating ethical AI governance, digital competence, institutional accountability, and sustainability capability.

Contribution of the Current Study

This study contributes to the emerging literature by synthesising evidence from 91 peer-reviewed studies published between 2020 and 2025. It brings together different variables, such as AI mechanisms, human and organisational outcomes, the governance responses, and capability development. While other models of AI ethics mostly involve the principles guiding the application of AI technologies in organisations, the AIMS AI-Human Framework describes the role of the

governance responses in regulating how AI applications impact human judgement, organisational accountability, and capability development aligned with the achievement of the Sustainable Development Goals (SDGs). The comparative advantage is that governance not only becomes a regulatory instrument but also a capacity-building tool.

LITERATURE REVIEW

Pedagogical and Capability Orientations

Research studies highlight learning orientations that include green learning, ethical learning, digital learning, and AI-supported learning. The literature further demonstrates that the development of capabilities for sustainability requires the integration of ecology-related knowledge, ethical thinking, digital abilities, and AI literacy, as opposed to separate pedagogical approaches. Across the studies reviewed in this section, there is a similar problem related to the issue of developing sustainability-related capabilities for HEIs within responsible AI governance practices. Thus, the literature suggests that there has been a transition from individualised efforts regarding sustainability towards an integrated framework, where ethical governance, digitalisation, learning about sustainability, and human-centred AI have emerged as interconnected competencies for educational institutions (Cebrián *et al.*, 2020; Redman *et al.*, 2021; Marengo *et al.*, 2024; Abulibdeh *et al.*, 2025). This convergence links the reviewed evidence to the development of the AIMS AI-Human Framework.

AI Mechanisms

Prior literature identifies four recurring mechanisms related to AI in HEIs: opacity, surveillance, control through algorithms, and asymmetric data distribution. In addition to being technological features, all of them are governance conditions impacting interactions between stakeholders and decisions made by them with the help of AI. The concept of opacity is used in the sense of limited possibilities for checking, contesting, or correcting outcomes, thus undermining trust and justice (Marengo *et al.*, 2024; Trevisan *et al.*, 2024). The mechanism of surveillance refers to the continuous gathering and processing of learners', employees', or institutions' data. As much as such approaches might facilitate personalisation and learning analytics, over-surveillance might endanger autonomy, privacy, psychological well-being, and control of the stakeholders involved (Henriksen *et al.*, 2024; Howell, 2021).

Algorithmic control involves instances when algorithms affect recommendation-making processes, predictions, adaptiveness, rankings, and evaluation processes, but over-reliance on algorithms in these aspects might lead to limitations in decision-making freedom (Abulibdeh *et al.*, 2025; Jarrahi *et al.*, 2021). The issue of data asymmetry occurs when individuals, educational

institutions, and providers experience inequality in terms of their ability to have access to data, analytics skills, algorithmic literacy, and technical knowledge (Kinowska and Sienkiewicz, 2023; Angelaki *et al.*, 2024). These mechanisms form the core of the AIMS AI-Human Framework.

Human and Institutional Outcomes

Previous studies have also shown that AI usage plays a role in the development of trust, autonomy, role clarity, accountability, decision quality, institutional legitimacy, and sustainability capability. The four AI dynamics affect the ways in which users interpret, trust, question, and implement decisions that are generated by the AI system. Opacity affects interpretability, procedural transparency, trust, and fairness; surveillance undermines autonomy, privacy, psychological safety, and institutional legitimacy; algorithmic control hinders role clarity, professional judgement, and decision quality; and data asymmetry impedes fairness, inclusiveness, accountability, and participation (Marengo *et al.*, 2024; Trevisan *et al.*, 2024; Henriksen *et al.*, 2024; Howell, 2021; Abulibdeh *et al.*, 2025; Jarrahi *et al.*, 2021; Kinowska and Sienkiewicz, 2023; Angelaki *et al.*, 2024). The literature indicates that the perceived reliability of algorithms impacts trust and engagement with AI technologies (Marengo *et al.*, 2024; Jarrahi *et al.*, 2021). Overall, prior literature links AI governance with sustainability capability development.

Governance Responses

The literature highlights that transparency, explainability, human oversight, accountability, proportionate monitoring, participatory design, and appeal mechanisms have emerged as significant elements of governance in terms of responsible AI adoption. These activities mitigate the impact of AI mechanisms on people's and organisations' actions and must be treated as part of an emerging organisational capacity rather than as a discrete compliance process. They can contribute to better interpretability, procedural justice, and the trustworthiness of decisions assisted by AI systems (Marengo *et al.*, 2024; Trevisan *et al.*, 2024). Additionally, they ensure that people's actions remain free from excessive algorithmic influence through maintaining the importance of context, professional discretion, and institutional accountability (Jarrahi *et al.*, 2021; Abulibdeh *et al.*, 2025). Furthermore, proportionate monitoring mitigates the dangers of unnecessary surveillance because it ensures that excess collection of data is avoided and that autonomy, privacy, and well-being are protected (Henriksen *et al.*, 2024; Howell, 2021). Participatory design and appeal mechanisms compensate for data asymmetry, allowing people to challenge AI-assisted decisions (Kinowska and Sienkiewicz, 2023; Angelaki *et al.*, 2024). Additionally, new findings related to behaviour-aware AI governance suggest that participatory and institutional mechanisms are valuable (Anthuvan *et al.*, 2025).

Research Gap

Existing studies have examined AI adoption, sustainability education, ethical governance, digital capability development, and human-centred AI in higher education. However, these streams remain largely fragmented. Limited research integrates AI mechanisms, human and institutional outcomes, governance responses, and sustainability capability development within a unified governance framework. This gap highlights the need for an evidence-based model capable of explaining how governance can moderate AI-related risks while supporting sustainability-oriented capability development. The present study addresses this gap through a systematic review and the development of the AIMS AI-Human Framework.

RESEARCH METHODS

A systematic review of the literature was performed to investigate the ways in which the subjects of AI, ethical governance, digital capability, and sustainability capability were covered in the field of higher education and other relevant institutional contexts (Page *et al.*, 2021). The literature review followed the PRISMA phases of identification, screening, eligibility assessment, and inclusion.

Searches were conducted in Scopus and Web of Science using the following Boolean search string:

(“artificial intelligence” OR “AI” OR “generative AI” OR “learning analytics” OR “algorithmic decision-making”) AND (“higher education” OR universit OR college*) AND (“governance” OR “ethics” OR “responsible AI” OR “human-centred AI” OR “human oversight” OR “accountability” OR “transparency” OR “explainability”) AND (“sustainability” OR “sustainable development” OR “Sustainable Development Goals” OR “SDGs” OR “capability development” OR “digital capability”).*

Only English-language peer-reviewed journal articles published from 2020 through 2025 were reviewed. Articles selected for inclusion pertained to higher education institutions or related contexts, while focusing on topics such as AI, governance, ethics, sustainability, and capability development. Excluded papers included those that were conference papers, editorials, book reviews, or that did not meet peer-reviewed status; examined only primary or secondary education institutions; contained little to no discussion of relevant governance or sustainability implications; or were duplicates. Following the elimination of duplicates, title and abstract screening, and full-paper review, 91 papers remained for analysis, as illustrated in Figure 1. Data extraction was conducted according to the study context, AI methods, governance factors, human and institutional impacts, sustainability considerations, and recommended governance practices.

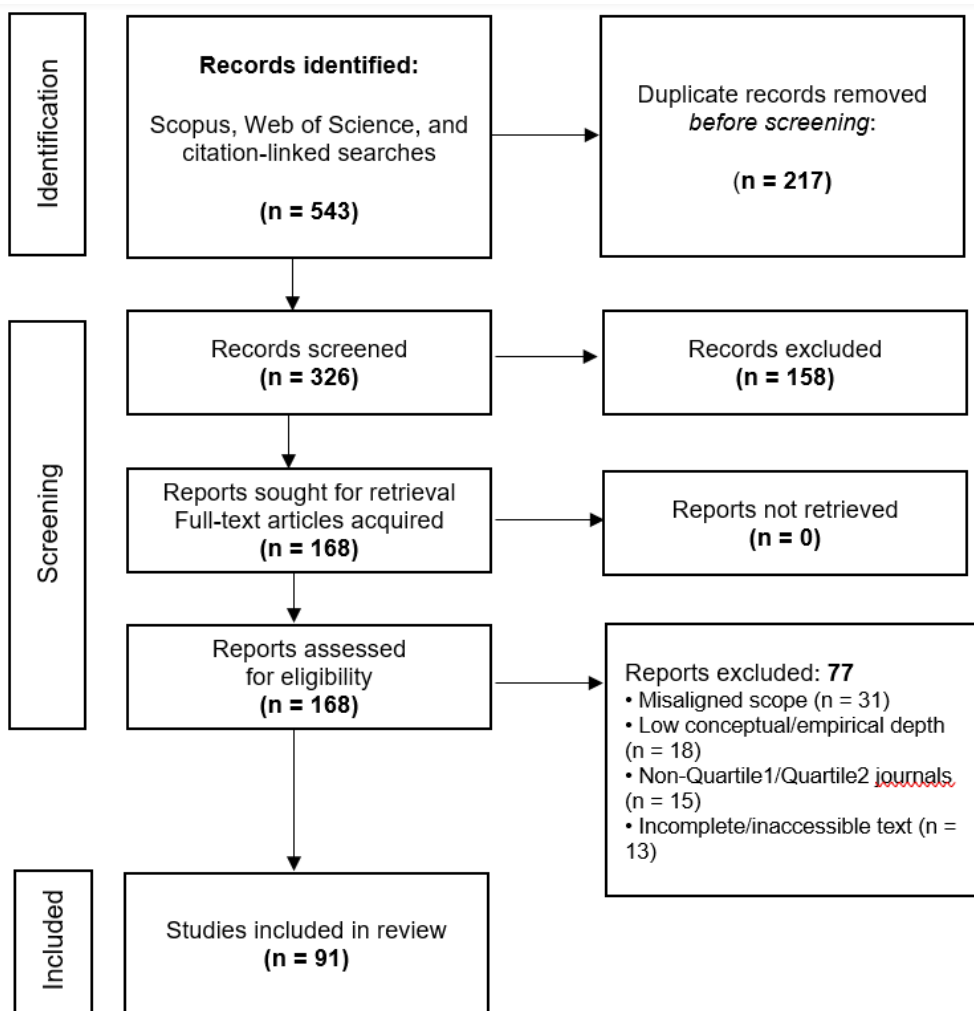


Figure 1: PRISMA 2020 flow diagram for the systematic review, 2020–2025

Source: Compiled by authors

Thematic coding was combined with a realist explanatory approach to examine how AI-enabled mechanisms influence human, institutional, and sustainability outcomes in context (Pawson *et al.*, 2005). The coding process followed three stages. First, studies were reviewed, and open coding was used to identify recurring concepts related to AI governance, sustainability, and capability development, including opacity, surveillance, algorithmic control, data asymmetry, trust, fairness, human oversight, and sustainability capability. Second, related codes were grouped into four analytical categories: AI mechanisms, human and institutional outcomes, governance

responses, and sustainability capability dimensions. Third, these categories were compared across studies to identify recurring mechanism-outcome-governance patterns. For example, opacity was associated with reduced interpretability and trust, while transparency and explainability emerged as corresponding governance responses. Similarly, surveillance was closely associated with privacy and autonomy risks, while proportionate monitoring and accountability emerged as governance responses. This evidence map, informed by human-centred AI, transformative learning, and systems thinking, supported the development of the AIMS AI-Human Framework. The thematic analysis also comprehensively answered RQs.

- **RQ1** was examined by identifying recurring AI-related mechanisms reported across the reviewed studies.
- **RQ2** was addressed by a thorough analysis of reported human and institutional outcomes associated with AI adoption.
- **RQ3** focused on governance responses, including transparency, accountability, oversight, monitoring, participation, and appeal mechanisms.
- **RQ4** was addressed by putting together identified mechanisms, outcomes, and governance responses into the AIMS AI-Human Framework.

ETHICAL STATEMENT

This study is based exclusively on previously published peer-reviewed literature and did not involve human participants, personal data, or animal subjects; therefore, ethical approval was not required.

FINDINGS

Study Characteristics

The peer-reviewed studies ($n = 91$) form an interdisciplinary evidence base in areas such as AI, higher education, education for sustainability, digital transformation, and ethical capabilities for governance. Table 1 summarises the distribution of the study types included in this review.

Table 1: Distribution of Study Types in the Systematic Review (N = 91)

Study Type	<i>n</i>	%
Systematic Review / Meta-Analysis	22	24.2
Conceptual / Theoretical	19	20.9
Quantitative / Experimental	19	20.9
Mixed-Methods Empirical	11	12.1
Other Empirical	8	8.8
Qualitative Empirical	7	7.7

Study Type	<i>n</i>	%
Qualitative Case Study	4	4.4
Case Study	1	1.1
Total	91	100

Source: Compiled by authors

Table 1 demonstrates an even representation of conceptual, review, and empirical studies, providing a balanced foundation for framework development. Prominent themes identified from these scholarly works include:

- A robust connection between transparency, surveillance, explainability, and algorithmic control and AI implementation in higher education.
- Emphasis on various governance responses, including human oversight, accountability, proportionate monitoring, participation, and appeals.
- Emergence of sustainability capability development as a holistic outcome, which includes ethical reasoning, digital proficiency, environmental literacy, and SDG-related education.
- The impact of AI decision-making processes on trust, autonomy, role clarity, fairness, and institutional legitimacy.

These themes provide the empirical basis for synthesising the AIMS AI-Human Framework.

Integrated Framework Synthesis

With regard to RQ4, the AI-Human Framework underpinning the work of the AIMS initiative comprises aspects of AI processes, human and institutional outcomes, the governance responses, and the development of sustainability capabilities. These mechanisms include opacity, surveillance, algorithmic control, and data asymmetry, influencing how decisions made using AI technologies are seen, monitored, delegated, and disputed. Their effects extend to trust, fairness, role clarity, agency, decision quality, legitimacy, and sustainability alignment. The framework therefore connects AI systems, governance responses, human and institutional outcomes, and sustainability capability development within an integrated higher education governance model. It suggests that sustainability capability should be understood through the interaction between ethics, digital skills, ecological awareness, and human-centred AI, rather than as a set of isolated organisational actions. The framework is described below.

THE AIMS AI-HUMAN FRAMEWORK

The thematic analysis has revealed that there is a pattern of repeated governance from AI mechanisms to human and institutional impacts, to the moderation of governance responses, and to the development of sustainability capabilities in the higher education context. As a result, the present research developed the AIMS AI-Human Framework, which is a governance framework informed by evidence about AI mechanisms, human and institutional outcomes, the moderation of governance responses, and development of sustainability capabilities within one higher education

framework. This framework, shown in Figure 2, highlights the process whereby AI mechanisms pose governance challenges, the effect of governance challenges on human and institutional outcomes, and the mitigation of governance challenges in order to foster the development of sustainability capabilities in higher education.

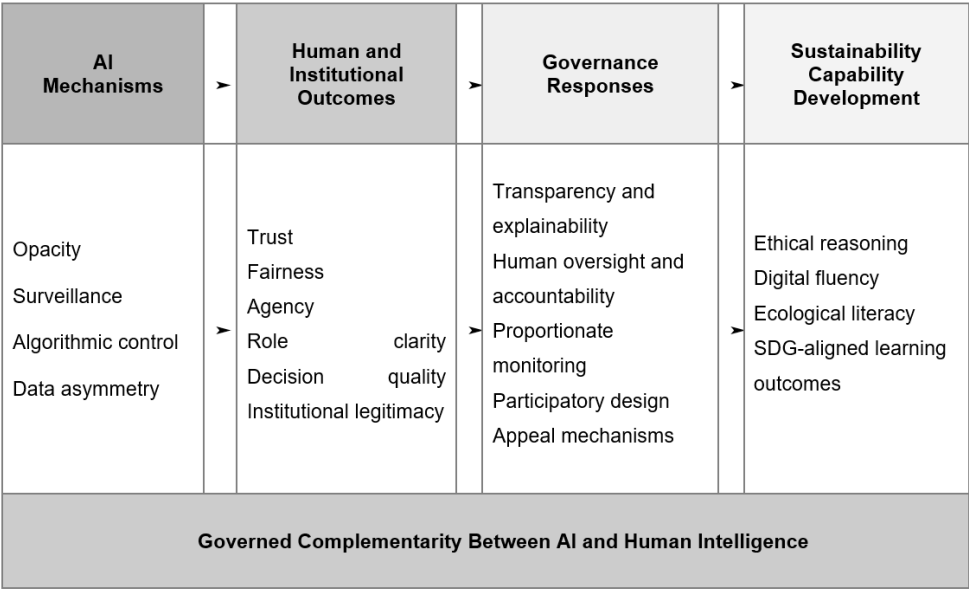


Figure 2: AIMS AI-Human Framework: Governed Complementarity between AI and Human Intelligence

Source: Authors' conceptual framework based on the synthesis of the 2020–2025 systematic review dataset (n = 91).

Evidence Base and Conceptual Validation

The AIMS AI-Human framework was constructed based on evidence synthesis and conceptual validation from the 91 reviewed articles. The components of the AIMS AI-Human Framework capture the common issues found, which include aspects of AI mechanisms like opacity, surveillance, algorithmic control, and data asymmetry; effects on individuals and institutions such as trust, autonomy, role clarity, accountability, decision-making ability, and capability development; governance responses that include transparency, explainability, human supervision, accountability, proportionate monitoring, participatory processes, and appeal mechanisms; and capability development for sustainability connected to Education for Sustainable Development (ESD), digital capabilities, and SDG transformation. Supported by human-centred AI, transformative learning, and systems thinking, the framework is grounded in the reviewed literature rather than being purely

normative. Its uniqueness lies in integrating AI mechanisms, outcomes, governance responses, and sustainability capability development into one model, showing how governance moderates the relationship between AI adoption and human-centred, sustainability-oriented outcomes in higher education.

Framework Structure and Logic

The AIMS AI-Human Framework applies insights from the literature review to explain how AI-powered systems affect sustainability capability development in higher education. It identifies four common AI mechanisms: opacity, surveillance, algorithmic control, and data asymmetry. These mechanisms influence trust, fairness, role clarity, autonomy, decision quality, institutional legitimacy, and sustainability alignment. Each mechanism is tied to corresponding forms of governance aimed at mitigating potential risks posed by AI as well as enhancing capability-building efforts in the context of sustainability. Transparency and explainability serve to tackle issues of opacity by increasing the interpretability and intelligent utilisation of the technology. Human oversight and accountability serve to counteract algorithmic domination through maintaining contextual relevance and organisational accountability. Proportionate monitoring helps minimise the dangers associated with surveillance while also facilitating personalisation and proactive approaches. Appeal mechanisms and participatory design processes can serve to combat issues of data asymmetry.

Operational Value for Higher Education

However, the AIMS AI-Human Framework acts not only as a tool for diagnosis but also as a governance design tool. It allows organisations to determine what the AI systems being employed are, the implications of using such systems for human and organisational life, and how governance should be approached in terms of capacity building towards sustainability. Rather than asking how the application of AI technology increases efficiency, personalisation, and effectiveness, it asks whether it preserves human judgement, creates accountability, promotes equity in participation, and builds capacity for sustainability.

Framework Validation and Theoretical Coherence

The AIMS AI-Human Framework was validated through evidence-based synthesis and theoretical alignment. In empirical terms, the framework arose from observed patterns across 91 studies conducted between 2020 and 2025, not from conjecture or supposition. The four AI-related mechanisms, including opacity, surveillance, algorithmic control, and data asymmetry, as well as related consequences at the levels of the individual, institution, and governance, were uncovered based on recurrent associations in the reviewed literature. Conceptually, the framework is linked to the following three anchors. Human-centred AI underpins the governance anchor via the concepts

of transparency, accountability, fairness, and meaningful human supervision (Jarrahi *et al.*, 2021; Marengo *et al.*, 2024). Transformative learning underpins the capability development anchor via reflection, agency, ethical judgement, and sustainability-oriented learning (Brundiers *et al.*, 2021; Redman *et al.*, 2021). Systems thinking underpins the sustainability anchor by treating AI-enabled education as a systemic socio-technical and institutional phenomenon driven by feedback loops and long-term consequences (Sterling, 2021). Overall, these empirical findings and theoretical support allow the proposed framework to be conceptualised as a comprehensive model for governing AI-enabled capability development for sustainability.

DISCUSSION

Conceptual Contribution

Conceptually, this paper advances knowledge by linking AI governance, human decision-making, and sustainability capability development in higher education. While prior research often treats ethics, digital capability, sustainability, and AI separately, the AIMS AI-Human Framework integrates them through a governance lens. It places AI not only as a technology but also as a governance variable that impacts how trust, equity, autonomy, accountability, and legitimacy are constructed in AI-assisted education. Furthermore, the model conceptualises the relationship between AI and human intelligence as complementary and not as a substitute within the dynamic knowledge ecosystem of institutions. By integrating ethics, digital literacy, and ecology, the approach broadens sustainable and transformational learning to AI-empowered institutions (Brundiers *et al.*, 2021; Redman *et al.*, 2021).

Practical Implications

Institutional readiness for AI deployment requires the application of the AIMS AI-Human Framework to support governance before, during, and after the deployment of AI technologies. Pre-deployment evaluation involves assessing governance preparedness, infrastructure, leadership, and alignment of AI technologies with educational purposes and sustainability objectives (Chan, 2023; Chounta *et al.*, 2024). Assessment of AI deployment requires consideration of transparency issues, surveillance challenges, and data asymmetry in assessing and analysing AI use (Jarrahi *et al.*, 2021; Marengo *et al.*, 2024). Clear policies regarding AI tools and accessible appeal mechanisms can prove instrumental in building stakeholder trust and confidence. Ethical AI literacy, readiness, and responsible behaviour can promote effective AI adoption within universities (Anthuvan *et al.*, 2025).

Policy and SDG Alignment

The AIMS AI-Human Framework responds to worldwide discussions about the ethical management of AI technology, the development of capabilities for sustainability, and responsible digitalisation in higher education. The framework suggests that AI should be seen as an addition to, rather than a replacement for, human intelligence, as AI will contribute to sustainability capabilities provided that human judgement is preserved (Marengo *et al.*, 2024). The framework also supports SDG 4.7 and SDG 12.8 by linking education for sustainable development, global citizenship, and access to sustainability-related information (Abas and Ahmed, 2025). In addition, it reflects the United Nations Educational, Scientific and Cultural Organisation (UNESCO)-oriented principles of ethical, human-centred AI by translating them into institutional governance mechanisms. Accordingly, AI governance is framed as a long-term sustainability strategy connecting digital transformation with educational responsibility and societal impact (Kioupi and Voulvoulis, 2019; Holst *et al.*, 2024; Miao *et al.*, 2024).

LIMITATIONS AND FUTURE RESEARCH

The present review is limited to 91 studies published between 2020 and 2025, thus highlighting recent changes in the field of higher education in relation to AI technologies and sustainable governance. The AIMS AI-Human Framework, though innovative, needs to be tested through empirical research. Further studies should empirically validate this framework across diverse higher education settings. Qualitative, quantitative, and mixed-method studies are required to assess how AI mechanisms, governance responses, and human outcomes interact in real-world educational environments.

CONCLUSIONS

Although AI adoption in higher education is accelerating, governance capability has yet to keep pace. The proposed AIMS AI-Human Framework recognises the relationship between human intelligence and AI as complementary strengths for organisations, indicating that the successful implementation of AI requires more than mere technological capability; it also requires institutional capability.

REFERENCES

- Abas, H. A. and Ahmed, A. (2025): Integrating SDGs Principles into the Strategic Planning of Infrastructure Development in Post-War Sudan. *World Journal of Science, Technology and Sustainable Development (WJSTSD)*, 20(4), pp. 383-401. Available at: <https://doi.org/10.47556/J.WJSTSD.20.4.2025.4>
- Abulibdeh, A., Baya Chatti, C., Alkhreibi, A. and El Menshawy, S. (2025): A scoping review of the strategic integration of artificial intelligence in higher education: transforming university excellence themes and strategic planning in the digital era. *European Journal of Education*, 60(1), p.e12908. Available at: <https://doi.org/10.1111/ejed.12908>
- Al Shukaili, A., Mohd Kassim, N., Al Alawi, A., Al Kindi, K.S.A., Khairninas, R. and Al-Riyami, S. (2025): The Roles of Higher Education Institutions (HEIs) in Supporting Entrepreneurship and Innovation in Developing Countries: Evidence from Oman. *World Journal of Entrepreneurship, Management and Sustainable Development*, 21(1), pp.19-45. Available at: <https://doi.org/10.47556/J.WJEMSD.21.1.2025.2>
- Angelaki, M.E., Bersimis, F., Karvounidis, T. and Douligeris, C. (2024): Towards more sustainable higher education institutions: Implementing the sustainable development goals and embedding sustainability into the information and computer technology curricula. *Education and Information Technologies*, 29(4), pp.5079-5113. Available at: <https://doi.org/10.1007/s10639-023-12025-8>
- Anthuvan, T. and Maheshwari, K. (2025): AI-C2C (conscious to conscience): A governance framework for ethical AI integration. *AI and Ethics*, 5(4), pp.4241-4253. Available at: <https://doi.org/10.1007/s43681-025-00736-2>
- Anthuvan, T., Prabhuram, S., Raju, G., Maheshwari, K. and Mishra, A. (2025): BRING YOUR OWN AI (BYOAI) IN THE WORKPLACE: PATTERNS, PITFALLS, AND THE BYOAI-GOV™ FRAMEWORK FOR BEHAVIOR-AWARE GOVERNANCE. *Lex Localis*, 23(S6), pp.2693-2716. Available at: <https://doi.org/10.52152/mmrgh422>
- Bernert, P., Wanner, M., Fischer, N. and Barth, M. (2025): Design principles for advancing higher education sustainability learning through transformative research: P. Bernert *et al.* *Environment, Development and Sustainability*, 27(9), pp.20581-20598. Available at: <https://doi.org/10.1007/s10668-022-02801-w>
- Brundiers, K., Barth, M., Cebrián, G., Cohen, M., Diaz, L., Doucette-Remington, S., Dripps, W., Habron, G., Harré, N., Jarchow, M. and Losch, K. (2021): Key competencies in sustainability in higher education—toward an agreed-upon reference framework. *Sustainability science*, 16(1), pp.13-29. Available at: <https://doi.org/10.1007/s11625-020-00838-2>
- Cebrián, G., Junyent, M. and Mulà, I. (2020): Competencies in education for sustainable development: Emerging teaching and research developments. *Sustainability*, 12(2), p.579. Available at: <https://doi.org/10.3390/su12020579>
- Chan, C.K.Y. (2023): A comprehensive AI policy education framework for university teaching and learning. *International journal of educational technology in higher education*, 20(1), p.38. Available at: <https://doi.org/10.1186/s41239-023-00408-3>

- Chounta, I.A., Ortega-Arranz, A., Daskalaki, S., Dimitriadis, Y. and Avouris, N. (2024): Toward a data-informed framework for the assessment of digital readiness of higher education institutions. *International Journal of Educational Technology in Higher Education*, 21(1), p.59. Available at: <https://doi.org/10.1186/s41239-024-00491-0>
- Crompton, H. and Burke, D. (2023): Artificial intelligence in higher education: the state of the field. *International journal of educational technology in higher education*, 20(1), pp.1-22. Available at: <https://doi.org/10.1186/s41239-023-00392-8>
- Henriksen, D., Mishra, P. and Stern, R. (2024): Creative learning for sustainability in a world of AI: Action, mindset, values. *Sustainability*, 16(11), p.4451. Available at: <https://doi.org/10.3390/su16114451>
- Holst, J., Singer-Brodowski, M., Brock, A. and De Haan, G. (2024): Monitoring SDG 4.7: Assessing Education for Sustainable Development in policies, curricula, training of educators and student assessment (input-indicator). *Sustainable Development*, 32(4), pp.3908-3923. Available at: <https://doi.org/10.1002/sd.2865>
- Howell, R.A. (2021): Engaging students in education for sustainable development: The benefits of active learning, reflective practices and flipped classroom pedagogies. *Journal of Cleaner Production*, 325, p.129318. Available at: <https://doi.org/10.1016/j.jclepro.2021.129318>
- Jarrah, M.H., Newlands, G., Lee, M.K., Wolf, C.T., Kinder, E. and Sutherland, W. (2021): Algorithmic management in a work context. *Big data & society*, 8(2), p.20539517211020332. Available at: <https://doi.org/10.1177/20539517211020332>
- Khan, S., Mazhar, T., Shahzad, T., Khan, M.A., Rehman, A.U., Saeed, M.M. and Hamam, H. (2025): Harnessing AI for sustainable higher education: Ethical considerations, operational efficiency, and future directions. *Discover Sustainability*, 6(1), p.23. Available at: <https://doi.org/10.1007/s43621-025-00809-6>
- Kinowska, H. and Sienkiewicz, Ł.J. (2023): Influence of algorithmic management practices on workplace well-being—evidence from European organisations. *Information Technology & People*, 36(8), pp.21-42. Available at: <https://doi.org/10.1108/ITP-02-2022-0079>
- Kioupi, V. and Voulvoulis, N. (2019): Education for sustainable development: A systemic framework for connecting the SDGs to educational outcomes. *Sustainability*, 11(21), p.6104. Available at: <https://doi.org/10.3390/su11216104>
- Marengo, A., Pagano, A., Pange, J. and Soomro, K.A. (2024): The educational value of artificial intelligence in higher education: A 10-year systematic literature review. *Interactive Technology and Smart Education*, 21(4), pp.625-644. Available at: <https://doi.org/10.1108/ITSE-11-2023-0218>
- Mezirow, J. (1997): Transformative Learning: Theory to Practice. *New Directions for Adult and Continuing Education*, 1997(74), pp. 5–12. Available at: <https://doi.org/10.1002/ace.7401>
- Miao, F., Shiohira, K. and Lao, N. (2024): *AI competency framework for students*. UNESCO Publishing. Available at: <https://doi.org/10.54675/JKJB9835>

- Page, M.J., McKenzie, J.E., Bossuyt, P.M., Boutron, I., Hoffmann, T.C., Mulrow, C.D., Shamseer, L., Tetzlaff, J.M., Akl, E.A., Brennan, S.E. and Chou, R. (2021): The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *bmj*, 372. Available at: <https://doi.org/10.1136/bmj.n71>
- Pawson, R., Greenhalgh, T., Harvey, G. and Walshe, K. (2005): Realist review-a new method of systematic review designed for complex policy interventions. *Journal of health services research & policy*, 10(1_suppl), pp.21-34. Available at: <https://doi.org/10.1258/1355819054308530>
- Redman, A., Wiek, A. and Barth, M. (2021): Current practice of assessing students' sustainability competencies: A review of tools. *Sustainability Science*, 16(1), pp.117-135. Available at: <https://doi.org/10.1007/s11625-020-00855-1>
- Sterling, S. (2021): Concern, conception, and consequence: Re-thinking the paradigm of higher education in dangerous times. *Frontiers in Sustainability*, 2, p.743806. Available at: <https://doi.org/10.3389/frsus.2021.743806>
- Strielkowski, W., Grebennikova, V., Lisovskiy, A., Rakhimova, G. and Vasileva, T. (2024): AI-driven adaptive learning for sustainable educational transformation. *Sustainable Development*, 33(2), pp.1921-1947. Available at: <https://doi.org/10.1002/sd.3221>
- Trevisan, L.V., Eustachio, J.H.P.P., Dias, B.G., Filho, W.L. and Pedrozo, E.Á. (2024): Digital transformation towards sustainability in higher education: state-of-the-art and future research insights: LV Trevisan *et al.* *Environment, Development and Sustainability*, 26(2), pp.2789-2810. Available at: <https://doi.org/10.1007/s10668-022-02874-7>
- Williamson, B. and Eynon, R. (2020): Historical threads, missing links, and future directions in AI in education. *Learning, Media and Technology*, 45(3), pp.223-235. Available at: <https://doi.org/10.1080/17439884.2020.1798995>

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